
Involving Criticality Safety Staff with Floor Operations: Improvements at LLNL

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Two major events have reshaped the LLNL Criticality Safety Program



- **1996 DOE Audit criticized a deteriorated criticality safety program**
- **Standdown and subsequent resumption of the Plutonium Facility**



The 1996 DOE Audit resulted in the re-formation of a strong Criticality Safety Group



- **CS staff had been previously dispersed to the field with little funding or core support**
 - This didn't work
- **A Criticality Safety Group was again formed and funded**
- **Additional staff were hired**



Plutonium Facility Resumption brought many improvements



- **Consolidated management structure over both facilities and programs**
- **Formalized work control process**
- **Enhanced and integrated criticality safety support**



These improvements enhanced criticality safety involvement with floor operations



- **CSG combines a strong core criticality safety program with support “in the field”**
- **Field staff are integrated into the facility/program effort**



CS “Core” provides essential support to CS staff and the CS Program



- **Establishes procedures and guidance for the CS Program and staff**
 - **Consistent with DOE Orders/Guides and ANSI/ANS Standards**
- **Provides resources to CS staff**
 - **Administrative support (secretarial, files, documents, etc.)**
 - **Computers, codes, software, V&V**
 - **Independent peer review**
 - **Training and professional development**
 - **Funding and staff**
- **Technically competent management oversight provides consistency**

A strong centralized “core” function is essential to provide a strong CS Program on the Floor



“Field staff” live with the customers



- **Offices in the facility (e.g., Plutonium Facility)**
- **Facilitates day-to-day contact with facility and program staff at all levels**
- **Facility management considers this a “key” to success**



CS support utilizes POC relationships



- **Every room in the Plutonium Facility is assigned to a CS Engineer (and back-up)**
- **Every operation/workstation is assigned to a CS Engineer (and back-up)**
- **CS staff work closely with program Responsible Individuals to develop criticality safety controls**
- **Assignments are consistent with primary programs**
- **Advantages:**
 - **Every room/operation/workstation is covered**
 - **Facilitates rapport between CS staff and customers**
 - **Facilitates CS familiarity and “ownership”**



CS staff perform 100% quarterly walk-thrus



- **Every room, every workstation included**
- **A detailed checklist guides and documents each walk-thru**



Example of CS walk-thru checklist





CS staff conduct discussion/feedback meetings with operators



- **Periodic meetings with operating staff by program**
- **Participation in weekly operator “Safety Feedback & Improvement” meetings**
- **Informal discussions on a day-to-day basis**



CS staff participate regularly at customer meetings



- **Management meetings (facilities and programs)**
- **Daily facility “stand-up” and staff meetings**
- **Safety meetings (OSP reviews, work permit reviews, etc.)**
- **“Daily Activity” meetings**

CS staff participate equally through formal assignments



Criticality safety control guidance was standardized



- **Standard Criticality Control Conditions (SCCCs)**
- **Workstation-specific limits**
- **Input from Handlers (program and facility)**
- **Formal facility procedures for changing SCCC and postings**
- **Continue to look for opportunities to consolidate and have fewer SCCC without risking safety**



Criticality safety postings were improved



- **Standardized**
- **Simplified**
- **Color-coded**



Example of CS posting





Criticality safety training is provided by the Criticality Safety Group staff



- **“Fundamentals of Criticality Safety” classes (tailored to specific programs)**
- **Plutonium Handler training**
- **Attempting to re-establish a hands-on class measuring changes to reactivity**



CS staff support an enhanced criticality drill/exercise training program



- **Satisfies requirements of ANSI/ANS-8.23**
- **Includes classroom training, drills, and exercises**
- **Involves facility, programs, and support personnel (e.g., CS, medical, Fire Department, LLNL Emergency Response structure, etc.)**
- **Drill/exercise included staff evacuation, response group play, table-top recovery exercise, feedback, and lessons learned**



In Summary



- **The Criticality Safety Program at LLNL provides enhanced support to Floor Operations by combining:**
 - **A strong “core” criticality safety program and support**
 - **“Field staff” who are integrated closely into the facility/program effort**